# Medical Education

# The Distribution of Services to the Underserved

## A Comparison of Minority and Majority Medical Graduates in California

ROBERT C. DAVIDSON, MD, MPH, *and* ROBERTO MONTOYA, MD, MPH, *Sacramento, California*

*We assessed the belief that minority physicians are more likely to serve traditionally underserved minority populations by examining the medical practice profiles of minority and majority physicians who graduated from seven California medical schools in 1974 and 1975. The results indicate that minority graduates are more likely to locate their practices in areas with health care personnel shortages (53%) than are majority graduates (26%). Minority physicians had a higher proportion of Medicaid or Medi-Cal patients, and they saw a greater percentage of minority patients (60%) than did majority physicians (21%). We conclude that minority graduates of US medical schools, at least those from California, serve traditionally underserved populations to a greater degree than do their majority graduate colleagues. These findings lend strong support to the contention that aggressive affirmative action programs by medical school admission committees serve the important utility function of improving the distribution of medical services.*

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In the past 20 years, minority enrollment in US medical schools has increased significantly. In 1968 only 3.6% of all US medical students were minorities.[1(p13)] The largest percentage of these were black students (2.7%, or 75% of all minority students), and three quarters of the black students were concentrated in two institutions with traditional and specific commitments to the education of black physicians, Howard University College of Medicine (Washington, DC) and Meharry Medical College (Nashville).[1(p1)] By the 1983-1984 academic year, minority student enrollment in US medical schools reached 15%, with a 16.8% representation in the entering class.[2,3(pp1-3)] In the same year, enrollment of underrepresented minorities—blacks, Chicano/Mexican-Americans, American Indians, mainland Puerto Ricans—as defined by the Association of American Medical Colleges (AAMC), rose to 11.1%.[3(pp1-3)]

Although many factors have contributed to this increased enrollment of minority medical students, a large part of the increase has been the result of deliberate policy decisions and a concerted national effort to recruit and train minority students. The Federal Health Career Opportunity Program has infused millions of dollars into US medical schools for minority recruitment and retention. Discussions leading to the formation of medical school policies on recruitment and admission of minority students have typically centered on issues of equity or parity.[4-6] Equal educational access for minorities became a major objective, born of a collective sense of fairness. Policies resulting from this concern serve an "equity function," and evaluation of their success has been available through examination of the proportions of medical school applicants, enrollees and graduates who are minorities and comparing these with the general population.

A second focus for policy discussions has concerned the belief that minority physicians may be more likely to serve minority populations. Statistics continue to show a disparity in life expectancy between whites and minorities, and minority populations are more likely to be living in areas with health care personnel shortages.[7(p1)] It has been argued that an increase in minority physicians will have the effect of bringing needed services to traditionally underserved areas. Thus, an increase in the percent of minority graduates of US medical schools would have a positive medical value, serving a "utility function" beyond the issue of fairness. In a recent article, Keith and co-workers assessed the effects of affirmative action programs by studying the 1975 graduating class from all US medical schools.[8] They found a greater percentage of minority graduates practicing in federally designated areas of health care personnel shortages and a greater

From the Department of Family Practice, University of California, Davis, Medical Center, Sacramento, and the Office of Statewide Health Planning and Development, State of California, Sacramento.

Reprint requests to Robert C. Davidson, MD, MPH, Department of Family Practice, UCDMC, 2221 Stockton Blvd, Sacramento, CA 95817.

percentage of minority patients in the practice population of minority physicians when compared with their majority colleagues. This study adds to the one of Keith and associates by a more in-depth look at the practice characteristics of California medical school graduates.

The long lead time associated with medical education has delayed the effects of the recently increased minority student enrollment on physician practice and patient care patterns. Consequently, the assumption that increased minority enrollment leads to increased medical services to traditionally underserved populations has remained difficult to assess. Those studies that have measured the ethnic profile of patients cared for by minority physicians have not had the opportunity to compare minority physicians with a majority control group. The purposes of our study was to measure differences in practice characteristics of minority and majority graduates of California medical schools to evaluate the utility function of increasing the number of minority medical school graduates.

## Methods

Three hypotheses were developed as the basis of this study:

1. Underrepresented minority graduates from California medical schools are more likely to practice in or adjacent to areas in California with health care personnel shortages than are majority graduates.
2. Underrepresented minority graduates from California medical schools are likely to serve a higher percentage of patients supported by Medi-Cal (Medicaid) or other public assistance payment programs
3. Underrepresented minority graduates from California medical schools are likely to serve a higher percentage of minority patients than are majority graduates.

The physicians selected for this study are graduates from seven of California's eight medical schools. Graduates of the eighth school are not included because the religious mission of the school leads its graduates to undertake overseas missionary assignments and because relatively few minority students graduated from this school during the study years. Of the remaining seven schools, five are publicly funded and two are private institutions.

The minority graduate study group consisted of all students included in the AAMC definition of underrepresented minorities—blacks, Chicano/Mexican-Americans, American Indians, mainland Puerto Ricans—who graduated from one of the seven California schools in either 1974 or 1975. These two years were chosen because they are among the earliest years in which a significant number of minority students graduated from California's medical schools, and because enough time has elapsed for the graduates to have completed residency training and established a practice.

Each school was asked to provide us with a list of all graduates from 1974 and 1975 and to identify each graduate who was a minority according to the AAMC definition. One school declined to release this information without first receiving written permission from its minority graduates. Results of the questionnaires from these minority persons who had given written permission were later analyzed to determine if there were any differences in responses when compared with the other minority graduates.

After the minority study population was identified, the comparison majority study population was selected. Using a statistical random sampling method, an equal number of majority graduates was chosen from the total number of 1974 and 1975 majority graduates from all seven California medical schools. The final study population included 144 minority graduates and 145 majority graduates.

A mail survey instrument was developed and pretested on minority and majority graduates from years not included in the study population. After pretesting, the questionnaire was mailed to both groups in the study. To avoid response bias, the survey instrument made no reference to the purpose of the study other than that it addressed important public policy issues concerning medical education. A follow-up questionnaire was mailed two weeks later to nonrespondents. After an additional two weeks had elapsed, a fourth-year medical student telephoned those persons who had not yet responded to solicit their participation in the study.

California Health Manpower Shortage Area criteria were used to compare the practice locations of graduates. The California Health Manpower Policy Commission was established by the California Legislature in 1973 and is charged with the responsibility of designating areas in California as having a shortage of health care personnel. The commission has divided the state into 249 medical service study areas using census county divisions as the unit of analysis. In rural areas, these census county divisions are aggregated in a rational manner so that no area is more than 20 constructive miles from a community population center. In urban areas, the census county divisions are subdivided along census tract lines, recognizing neighborhoods with similar demographic characteristics. These urban subdivisions generally include a population of between 20,000 and 150,000.[9]

Once these medical service study areas have been identified, a shortage of health care personnel is declared if the physician-to-population ratio is greater than 1:1,967. Other criteria, such as percent of the population 65 years and older, percent of the population below the US Census Poverty Index and extreme distance to the nearest medical service location are also considered when designating a medical service study area as underserved.

Because of this somewhat artificial division of communities, particularly in urban areas, medical service study areas that are not designated as underserved but are immediately adjacent to those areas that are underserved were included in this study definition as locations that serve underserved populations. Those medical service study areas that are not adjacent to an underserved area and are not designated by the commission as medically underserved were defined as locations that do not serve underserved populations.

## Results

A total of 289 questionnaires were mailed to potential respondents and 138 were returned, for a 48% response rate. Of 144 minority graduates, 66 returned questionnaires, for a 46% response rate; of 145 majority graduates, 72 replied, for a 50% response rate. The difference in the ratio of respondents to nonrespondents for minority and majority graduates was not significant ($\chi^2$, $P > .05$, no significance).

The response rates for schools were similar, with the exception of the one school that required permission from each minority graduate to be included in the study. In all, 19 mi-

nority graduates from this school agreed to participate and 18 returned their questionnaires. According to AAMC records, 46 minority students graduated from this school during the 1974 and 1975 study years. Therefore, the minority graduate response rate for the school requiring individual permission was 39%. This was lower than the 46% response rate for minorities from all other schools. The response rate for the majority graduates from the school requiring minority consent agreements was 49%, which is consistent with the rate for the total majority study group. This was expected, as the method for selecting majority graduates of this school was no different from that at the other schools. Questionnaire responses for minority respondents from this school were compared with all the other minority respondents. For the questions pertaining to location of the practice in or adjacent to a medically underserved area, and to percent of practice reimbursed by Medi-Cal (Medicaid), there was no statistical difference ($\chi^2$, $P > .01$, no significance) between the two groups. Minority graduates from the school requiring consent agreements, however, did report having practices that included higher percentages of patients from various ethnic backgrounds than did the minority graduates of the other six schools ($\chi^2$, $P < .01$). Since these respondents knew that the study concerned minority graduates and their practices, their responses may have been biased.

*Practice Location*

Minority graduates practicing in California were more likely to be located in medical service study areas, or in immediately adjacent areas, that are designated as having health care personnel shortages. Although questionnaires were mailed to graduates who practiced both in California and in other states, only the practice addresses of the California-based physicians were analyzed. Of the 45 minority graduate respondents practicing in California, 24 (53%) met the underserved/adjacent criterion compared with 14 of the 53 (26%) of the majority graduate respondents ($\chi^2$, $P < .01$). There was no significant difference between minority and majority graduates in the likelihood of their remaining in California.

*Medicaid Practice*

Minority graduates had a higher percentage of public assistance patients in their practices than did the majority graduates. All graduates were asked what percentage of their total practice consisted of Medi-Cal or Medicaid patients, and their responses were given in 10 percentile point categories. A total of 64 minority graduates and 70 majority graduates answered this question. The 64 minority graduates answering this question described their Medicaid patient population as follows: 21 (33%) saw less than 10% Medicaid patients, 12 (19%) had between 10% and 20%, 11 (17%) had between 20% and 40%, 12 (19%) had between 40% and 70% and 8 (13%) had between 70% and 99+% Medicaid patients. The 70 majority graduate respondents described their Medicaid patient populations as follows: 41 (59%) saw less than 10%, 12 (17%) had between 10% and 20%, 10 (14%) had between 20% and 40%, 4 (6%) had between 40% and 70% and 3 (4%) had between 70% and 99+% Medicaid patients. Figure 1 illustrates these results. A pooled contingency table indicated a significant difference between the two groups of graduates ($\chi^2$, $P < .02$).

*Ethnicity of Practice*

Minority graduates saw a higher percentage of minority patients than did majority graduates. Minority graduates reported the average ethnic composition of their patients as follows: 39.6% majority patients (including Asian patients), 23.5% black, 33.1% Hispanic and 3.7% "other." Majority graduates reported an average patient mix of 79.5% majority patients, 6.7% black, 12.5% Hispanic and 1.3% "other" (Figure 2). The $\chi^2$ test was applied and statistical significance was confirmed ($P < .01$).

The profile of patients was also analyzed comparing the ethnicity of the provider with the reported practice patient mix. Black graduates reported seeing 33.3% majority patients, 50.6% black patients, 14.5% Hispanic patients and 1.3% "other" patients (Figure 3). Hispanic graduates reported having a patient mix of 42.4% majority patients, 7.7% black patients, 46.8% Hispanic patients and 2.8% "other" patients (Figure 4).

## Comments

The results of this study support the proposition that underrepresented minority medical graduates serve traditionally underserved populations to a greater degree than do their majority graduate colleagues. Minority graduates maintain practices that serve a significantly higher percentage of

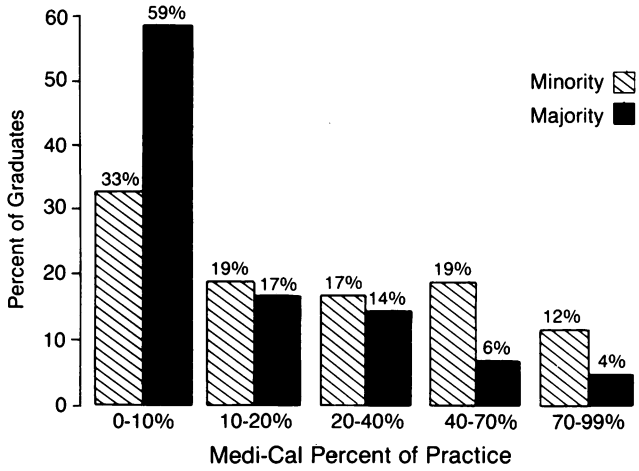


**Figure 1.**—Comparison of percent of Medicaid (Medi-Cal) patients in minority and majority practices in California.

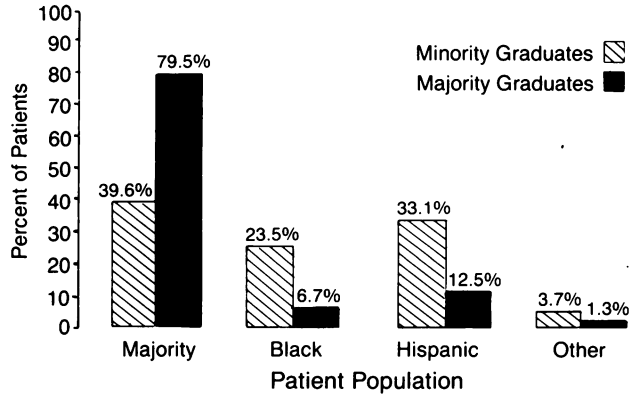


**Figure 2.**—Comparison of ethnic composition of minority and majority graduate practices.

blacks, Chicano/Mexican-Americans, Medicaid recipients and patients from underserved geographic locations. These findings are, of course, highly interrelated. Areas of California that have the highest percentage of Medi-Cal patients also have large minority populations and are more likely to be declared medically underserved.[10,11]

There continues to be significant discussion regarding influences on physician practice locations.[12] The issue of physician practice location in areas where there are high percentages of ethnic minorities has been studied extensively over the years.[13-15] Lieberson found that physicians of a given ethnic group locate their offices in accordance with the residential distribution of their ethnic group.[15] Guzick and Jahiel found that nonwhite or non-American physicians tend to locate their offices in areas having a population that is ethnically similar to their own.[13] It has been shown by others that black physicians serve a larger percentage of black patients than do majority physicians.[5,6,16,17] It is not surprising that our study found a similar relationship between Hispanic physician graduates and the populations they serve. Language capability may be a major contributor to Hispanic patients' preference for Hispanic physicians.

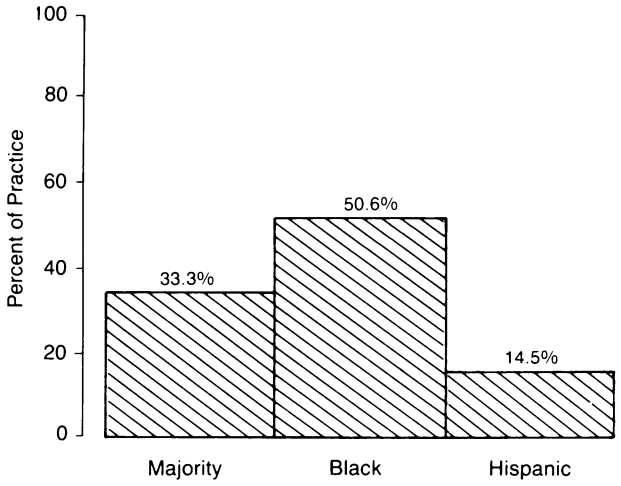


**Figure 3.**—Ethnic profile of patients of black graduates.

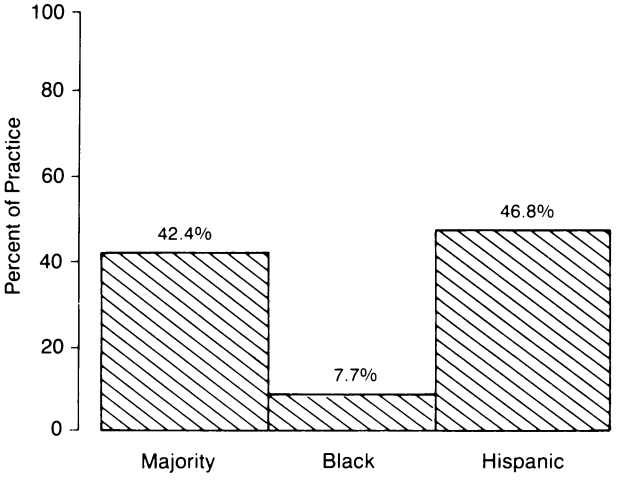


**Figure 4.**—Ethnic profile of patients of Hispanic graduates.

A disproportionately high percentage of minority residents is located in areas designated in California as medically underserved.[11] Elesh and Schollaert suggest that physicians' desire to practice in locations with their own ethnic identity group can overcome the competing negative income and status factors associated with areas with a high percentage of minorities up to a yet-undefined real income loss, at which point income becomes the predominant factor. Our findings that minority medical school graduates have more minority patients and are more likely to locate their practices in, or adjacent to, underserved areas are consistent with this conclusion.

Findings from this study and others such as the study by Keith and associates[8] lend strong support to the contention that aggressive affirmative action programs by medical school admission committees serve an important medical function—increasing the number of physicians most likely to deliver services to the traditionally underserved. To those admission committee members in US medical schools who each year ask the question "why?" in reference to strong affirmative action programs, this study adds more evidence that the answer lies in a combination of fairness (equity) and greater service to underserved populations (utility).

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